

We Claim:

- 1) A biologically active compound associated with a disulfide-containing compound, comprising: the disulfide-containing compound having a labile disulfide bond that is selected from the group consisting of (a) a disulfide bond that is cleaved more rapidly than oxidized glutathione and (b) a disulfide bond constructed from thiols in which one of the constituent thiols has a lower pKa than glutathione and (c) a disulfide bond that is activated by intramolecular attack from a free thiol.
- 2) The compounds of claim 1 wherein the disulfide-containing compound comprises a polymer.
- 3) The compound of claim 2 wherein the polymer is selected from the group consisting of a polycation, a polyanion, a neutral polymer and an amphipathic polymer.
- 4) The compound of claim 1 wherein the biologically active compound is a polynucleotide.
- 5) The compound of claim 1 wherein the biologically active compound is a polypeptide.
- 6) The compound of claim 1 wherein the disulfide-containing compound contains a ligand.
- Sub a' 7) A compound for inserting into an organism, comprising: the compound having a disulfide bond that is labile under physiologic conditions selected from the group consisting of (a) a disulfide bond that is cleaved more rapidly than oxidized glutathione and (b) a disulfide bond constructed from thiols in which one of the constituent thiols has a lower pKa than glutathione and (c) a disulfide bond that is activated by intramolecular attack from a free thiol.
- 8) The compound of claim 7 wherein the compound comprises an amphipathic compound.

9) The compound of claim 7 wherein the compound comprises a polymer.

Sub c² 10) The method of claim 7 wherein the polymer is selected from the group consisting of a polycation, a polyanion, a neutral polymer, and an amphipathic polymer.

11) The method of claim 7 wherein the compound contains a ligand.

Sub a² 12) A process for forming a compound having a labile disulfide bond for use with an organism, comprising:

- a) forming the compound having a disulfide bond selected from the group consisting of (i) a disulfide bond that is cleaved more rapidly than oxidized glutathione, and (ii) a disulfide bond constructed from thiols in which one of the constituent thiols has a lower pKa than glutathione, and (iii) a disulfide bond that is activated by intramolecular attack from a free thiol;
- b) inserting the compound into the organism.

13) The process of claim 12 wherein the compound comprises a polymer.

14) The process of claim 12 wherein the polymer is selected from the group consisting of a polycation, a polyanion, a neutral polymer, and an amphipathic polymer.

15) The process of claim 12 wherein the compound having a labile disulfide bond is associated with a biologically active compound.

16) The process of claim 15 wherein the biologically active compound is a polynucleotide.

17) The process of claim 15 wherein the biologically active compound is a polypeptide.

Sub a³ 18) The process of claim 12 wherein the disulfide is a bifunctional molecule.

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